

SOV 77-3-4-2/23

A Study of the Primary Centers Formation Process in a Working Emulsion

this redistribution process is similar to Ostwald maturation. He further states that one of the causes of the drop in photosensitivity after its maximum is the decrease in the concentration of small centers, to which he assigns the function of electron donors and acceptors of "positive holes" during exposure. The author was aided by suggestions from Corresponding Member of the AS, USSR, K.B. Chibisov and Professor Ye.A. Kirillov. There are 6 graphs, 2 tables and 3 Soviet references.

ASSOCIATION: Institut fiziki Odesskogo universiteta im. Mechnikova (The Institute of Physics, Odessa University imeni Mechnikov)

SUBMITTED: November 13, 1956.

1. Photographic emulsions--Photosensitivity 2. Photographic emulsions  
--Test methods 3. Photographic emulsions--Testing equipment 4. Photographic emulsions--Photochemical reactions

Card 2/2

AUTHOR:

Broun, Zh. L.

SOV-77-3-5-2/21

TITLE:

A Study of the Transformation of Primary Centers into Latent Image Centers and Visible Blackening (Issledovaniye prevrashcheniya pervichnykh tsentrov v tsentry skrytogo izobrazheniya i vidimoye pocherneniye)

PERIODICAL:

Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1958, Vol 3, Nr 5, pp 323-328 (USSR)

ABSTRACT:

Experiments were carried out to study the various stages of the photographic process from the formation of the primary centers to the obtaining of visual silver blackening. Films were prepared from standard and diluted silver bromide emulsion and subjected to varying degree of exposure, development and fixing. Spectrum curves were prepared for each object, thus constituting a spectrum picture of the whole photographic process. The results show that the induction stage of the process consists in dissolving the solid state with resultant intense formation of the new solid state - i.e. free silver. This was further confirmed by testing Lippman emulsion film with solutions of sodium thiosulfate and potassium bromide in various concentrations. The gradual accumulation and growth of silver impurity centers was observed during

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A Study of the Transformation of Primary Centers into Latent Image Centers and Visible Blackening

chemical maturation, increasing in concentration and dimensions during exposure and, with a rapid decomposition of silver, during development. This is direct proof of the physicochemical unity of the photographic process. Member-Correspondent of the AS, USSR, Prof. K.V. Chibisov and Prof. Ye.A. Kirillov contributed valuable advice to the author during his studies. There are 5 sets of graphs, 1 table and 4 Soviet references.

ASSOCIATION: Institut fiziki Odesskogo gosudarstvennogo universiteta imeni Mechnikova (The Institute of Physics at Odessa State University imeni **Mechnikov**)

SUBMITTED: November 13, 1956

1. Photographic emulsions--Performance 2. Photographic emulsions  
--Test results 3. Photographic Films--Processing 4. Photographic  
Film--Effectiveness

Card 2/2

SOV/51-7-3-19/21

AUTHOR: Broun, Zh.L.

TITLE: On the Use of the Photometric Sphere in the Differential Spectrophotometric Method

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 3, pp 421-425 (USSR)

ABSTRACT: The differential spectrophotometric method of Kirillov et al (Ref 1) was used in studies of chemical sensitization of photographic emulsions, since it allowed direct observation of formation of and changes in silver particles. In this connection it was necessary to develop a technique by means of which only the impurity absorption spectrum of the emulsion could be measured and which would allow for scattering of light. The paper describes the use of Ulbricht's photometric sphere (Ref 8) for this purpose. The sphere was of 200 mm diameter (Fig 1) covered inside with a layer of magnesium oxide. It consisted of two halves, one of which (I) had a rectangular window of 3 x 10 mm dimensions and was rigidly fixed to the exit slit of a monochromator. The other half (II) could be moved along an optical bench (in order to place a sample in the centre of the sphere) or it could be rigidly attached to the first half. An opening was cut in the lower part of the sphere through which the sample holder (III) could be inserted. An FEES-13 photoelement (IV) was fixed to the upper part of the hemisphere I. Control

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• On the Use of the Photometric Sphere in the Differential Spectrophotometric Method

experiments on photochemically coloured silver bromide Lippman emulsion showed that its impurity absorption spectrum (with fine structure) obtained using the photometric sphere agreed (within experimental error) with the results obtained by means of the usual spectrophotometric apparatus (Fig 4). A table on p 423 shows the positions of the absorption maxima obtained using the photometric sphere (rows of figures denoted by I) and the usual spectrophotometric apparatus (rows denoted by II). The photometric sphere was used also to check other results of earlier work and the author came to the following conclusions. (1) The photometric-sphere curves do not differ greatly from those obtained spectrophotometrically. (2) The effect of scattering shows in a displacement of the absorption curves, as shown earlier by Mechayeva and Kirillov (Ref 7). (3) The use of the photometric sphere may be justified in cases when it is necessary to separate the effects of absorption, particularly in

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On the Use of the Photometric Sphere in the Differential Spectrophotometric Method

the cases when scattering alters considerably during the process being investigated. Acknowledgments are made to Ye.A. Kirillov and K.V. Chibisov for their advice. There are 7 figures, 1 table and 8 references, 7 of which are Soviet and 1 German.

SUBMITTED: December 1, 1958

Card 3/3

5(4), 23(5)

AUTHORS:

SOV/20-126-5-30/69  
Varshaver, B. G., Broun, Zh. L., Chibisov, K. V., Corresponding  
Member, AS USSR

TITLE:

On the Spectral Properties of Optically Non-sensitized Photo-  
graphic Emulsions (O spektral'nykh svoystvakh opticheski  
nesensibilizirovannykh fotograficheskikh emul'siy)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 5, pp 1021-1024  
(USSR)

ABSTRACT:

On the basis of papers (Refs 1-3) according to which silver  
bromide is not only sensitive to rays of its own absorption  
spectrum but also to rays with longer waves, the conclusion is  
drawn that in this connection local disturbances in the micro-  
crystals caused by impurities play a part. The change in the  
light sensitivity of the emulsion must be in connection with the  
absorption spectrum of the impurities. These spectra were,  
therefore, taken by means of the spectrophotometer SF-4 and a spec-  
trographic apparatus by Ye. A. Kirillov (Fig 1). The relation  
between the absorption by impurities and light sensitivity was  
studied by comparing the isochromatic curves, which show the  
dependence of the absorption by impurities on the time for

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On the Spectral Properties of Optically Non-sensitized Photographic Emulsions

ripening of the emulsion for different  $\lambda$ , with the kinetic curves of the total light sensitivity (Figs 2,3). The fine structure of the absorption spectra indicates that the crystallization of silver bromide is in the first ripening accompanied by the formation of impurities consisting of silver nuclei. The latter have an immediate effect upon the total sensitivity as well as the sensitivity to blue light. The sensitivity to long-wave light increases only slowly during the time for ripening and is not determined by the amount of AgJ, which increases only the concentration of the primary nuclei (silver nuclei) and the total sensitivity and the sensitivity to blue light. According to Mitchell (Ref 7) the following is assumed: The sensitivity to long-wave light is caused by a kind of coagulation of the nuclei to larger units. The concentration of these units remains inconsiderable compared with that of the primary nuclei. Experiments made by Ye. P. Kramaley (Ref 8) show that silver may occur in the emulsion also in atomic or molecular state apart from the colloiddally disperse form. This is assumed for the primary nuclei (I) which, therefore, consist of  $Ag_2$ , are in equilibrium with  $AgBr$ , and are adsorbed in

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On the Spectral Properties of Optically Non-sensitized Photographic Emulsions

the lattice defects of the microcrystals. They cause the total and blue light sensitivity. The secondary nuclei (II) - the units - determine the sensitivity to long-wave light and represent the sublatent nuclei. The third kind are the catalytic developmental nuclei (III). They consist of amorphous silver particles with a high energy potential. They are formed during the capture of photo electrons by the positively charged sublatent nuclei (II). The transformation (I) - (II) - (III) takes place in the course of ripening of the emulsion as well as under the action of light. These impurity nuclei take part in the formation of the latent image. There are 3 figures and 13 references, 7 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy kinofotoinstitut (All-Union Scientific Research Institute of Cinematography and Photography), Institut fiziki Odesskogo gosudarstvennogo universiteta im. I. I. Mechnikova (Physics Institute of Odessa State University imeni I. I. Mechnikov)

SUBMITTED: April 1, 1959  
Card 3/3

LEVITSKAYA, R.A.; BROUM, Zh.L.; CHIBISOV, K.V.

Transformation of the additive centers during accelerated aging  
of photographic emulsions. Zhur.nauch. i prikl.fot i kin. 5 no.5:  
361-363 S-O '60. (MIRA 13:12)

1. Institut fiziki Odesskogo universiteta imeni I.I.Mechnikova i  
Kafedra uchebnoy i nauchnoy fotografii i kinematografii Moskovskogo  
gosudarstvennogo universiteta.  
(Photographic emulsions)

MEL'NICHUK, L. P.; BROUN, Zh. L.; CHIBISOV, K. V.

Localization of the topochemical reaction during the rapid aging of photographic emulsions. Zhur.nauch.i prikl.fot. i kin. 6 no.4:301-304 J1-Ag '61. (MIRA 14:11)

1. Institut fiziki Odesskogo universiteta imeni I. I. Mechnikova i Kafedra uchebnoy i nauchnoy fotografii i kinematografii Moskovskogo universiteta.

(Photographic emulsions)

MEL'NICHUK, L.P.; BROUN, Zh.L.

Gold sensitizing of the Lippman emulsion. Zhur.nauch.i prikl.fot.i  
kin. 7 no.6:465-467 N-D '62. (MIRA 15:12)

1. Nauchno-issledovatel'skiy institut fiziki pri Odesskom  
gosudarstvennom universitete imeni I.I. Mechnikova.  
(Photographic emulsions)

BROUN, Zh.L.; CHIBISOV, K.V.

Comparison study of the chemical and physical developing. Zhur.  
nauch.i prikl.fot.i kin. 8 no.1:59-61 Ja-Feb. '63.

(MIRA 16:2)

1. Nauchno-issledovatel'skiy institut fiziki Odesskogo  
universiteta i kafedra uchebnoy i nauchnoy fotografii  
i kinematografii Moskovskogo gosudarstvennogo universiteta.  
(Photography--Developing and developers)

BROUN, Zh.L.

Periodicity in the kinetics of the development process. Zhur.nauch. i  
prikl. fot. i kin. 8 no.2:140-142 Mr-Ap '63. (MIRA 16:3)

1. Nauchno-issledovatel'skiy institut fiziki Odesskogo gosudarstvennogo  
universiteta imeni I.I.Mechnikova.

(Photography---Developing and developers)

S/020/63/149/002/023/028  
B117/B186

AUTHORS: Broun, Zh. L., Kirillov, Ye. A., Chibisov, K. V.,  
Corresponding Member AS USSR

TITLE: The discrete character of the extrinsic spectral photo-  
sensitivity of photographic emulsions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 2, 1963, 353-356

TEXT: The extrinsic spectral photosensitivity of photographic emulsions was studied by the differential method which determines the relative sensitivity to light:  $S'_\lambda = S_{\lambda,t}/S_{\lambda,0} = H_{\lambda,0}/H_{\lambda,t}$ .  $S_\lambda$  is the spectral photosensitivity and  $H_\lambda$  the monochromatic radiation energy which gives rise to a certain photoeffect (criterion of the light sensitivity) during the ground-state of the emulsion (0) and in a definite instant (t) of chemical sensitization, respectively. The authors studied a Lippmann silver bromide emulsion sensitized with gold chloride, and normal chemically ripened emulsions. The curves of the extrinsic spectral photosensitivity of the Lippmann emulsion showed: selective bands with coincident maxima at a different degree of sensitization; during  
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The discrete character of the extrinsic ...

S/020/63/149/002/023/028  
B117/B186

sensitization different changes of band intensity; considerable increase in extrinsic photosensitivity beyond the long-wave limit of the individual absorption of the solid emulsion phase. The curves of the relative spectral photosensitivity of normal emulsions showed a similar course: low  $S_{\lambda}$  -values in the region up to  $\lambda = 530$  m, and high ones in the long-wave region, especially when the time of chemical maturing was prolonged; discrete bands with the maxima lying close together. The data obtained indicated that the increased photosensitivity of photographic emulsions is due to the double function of the primary molecular-colloidal centers. These centers are assumed to act at the same time as electron donors and bromine acceptors, when the latent image is formed. There are 2 figures and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut fiziki Odesskogo gosudarstvennogo universiteta  
(Scientific Research Institute of Physics of the Odessa State University);  
Nauchno-issledovatel'skiy kino-fotoinstitut  
(Motion Picture and Photography Scientific Research Institute)

SUBMITTED: November 30, 1962  
Card 2/2



ACCESSION NR: AP4013973

S/0077/64/009/001/0038/0046

AUTHORS: Broun, Zh. L.; Varshaver, B. G.; Mel'nichuk, L. P.; Chibisov, K. V.

TITLE: Interaction investigations between spectral sensitivity and admixture spectral absorption of photographic emulsions

SOURCE: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, v. 9, no. 1, 1964, 38-46

TOPIC TAGS: spectral sensitivity, photographic emulsion, silver bromide, admixture center, gold sensitizer, discrete bands

ABSTRACT: The possible existence of a discrete character in the spectral sensitivity of an optically unsensitized photographic emulsion has been studied. First, the magnitude of relative spectral sensitivity  $S'_{\lambda} = H_{\lambda} / \phi H_{\lambda, t}$  ( $H_{\lambda}$  - energy of monochromatic radiation) is calculated for various values of  $\lambda$  and, secondly, a silver bromide Lieppman emulsion is used to observe carefully the thin structure of the admixture center spectra, using the differential method with a gold sensitizer. The spectrosensitometer ISP-73 is used to determine  $S_{\lambda}$  in the wave-length interval 420-700 m $\mu$ . It is shown that the admixture spectral sensitivity is distributed in

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ACCESSION NR: AP4013973

discrete bands both in the limits of fundamental absorption of silver halogenide and in the long wave-length region, with a spectral position corresponding to thin structured bands of the admixture spectra. A discussion is given on the role played by these centers on the emulsion layer under the action of light. "The authors are grateful to Professor Ye. A. Kirillov for evaluating this work." Orig. art. has: 6 figures and 2 tables.

ASSOCIATION: Odesskiy gosudarstvennyy universitet im. I. I. Mechnikova (Odessa State University); Vsesoyuznyy nauchno-issledovatel'skiy kinofotoinstitut (NIKFI) (All-Union Scientific Research Motion Picture Institute)

SUBMITTED: 13Nov62

DATE ACQ: 14Feb64

ENCL: 00

SUB CODE: PG

NO REF SOV: 017

OTHER: 003

Card 2/2

PYATNITSKAYA, A.B.; POPOVA, Zh.S.; BROUN, Zs.L.

Effect of the preliminary mordant treatment of emulsion layers on  
light sensitivity and latent image. Zhur.nauch. i prikl.fot. i kin.9  
no.4:283-285 J1-Ag '64. (MIRA 17:10)

1. Nauchno-issledovatel'skiy institut fiziki Gosudarstvennogo univer-  
siteta imeni Mechnikova, Odessa.

PYATNITSKAYA, A.B.; MEL'NICHUK, L.P.; BROUN, Zh.L.; CHIBISOV, K.V.

Evolution of additives' centers during the process of after-ripening and accelerated aging of photographic emulsions.  
Par' 1: Changes in the spectral absorption during chemical ripening and accelerated aging. Zhur. nauch. i prikl. fot. i kin. 9 no.5:321-327 S-O '64.

(MIRA 17:10)

1. Odesskiy gosudarstvennyy universitet imeni Mechnikova.

KIRILLOV, Ye.A. [deceased]; NESTEROVSKAYA, Ye.A.; BROUN, Zh.L.; GOL'DENBERG, A.B.

Nature of the centers of thin structures. Zhur.nauch. i prikl.  
fot. i kin. 10 no.2:148-149 Mr-Ap '65.

(MIRA 18:5)

BROUN, Zh.L.; KIRILLOV, Ye.A. [deceased]; CHIBISOV, K.V.

Comparative study of the chemical ripening and photolysis of  
photographic emulsions. Dokl. AN SSSR 161 no.3:624-626 Mr '65.  
(MIRA 18:4)

1. Chlen-korrespondent AN SSSR (for Chibisov).

WELSH, J. C.; MCH, Th.1.

Study of the chemical sensitization with gold. Part 2. Sensitizing by means of the introduction of gold salts to the hydrogen emulsion or by the bathing of its finished films. Zhur. nauch. i prikl. fot. i kin. 10 no.4:258-261 J1-Ag '65. (MIRA 18:7)

2. Nauka-issledovatel'skiy institut fiziki obrazovaniya i razvitiya  
Kievogo universiteta imeni Moshkova.

MEL'NICHUK, L.P.; BROUN, Zh.L.

Studying the chemical sensibilization with gold. Part 1.  
Effect of simple and complex gold salts on the Lippman  
emulsion. Zhur.nauch.i prikl.fot. i kin. 10 no.3:178-181  
My.-Je '65. (MIRA 18:11)

1. Nauchno-issledovatel'skiy institut fiziki Odesskogo  
gosudarstvennogo universiteta imeni I.I.Mechnikova.



L 07170-67 ENT(1) IJP(c)

ACC NR: AT6029515 (A)

SOURCE CODE: UR/3180/66/011/000/0022/0028

AUTHOR: Broun, Zh. L.; Mal'nichuk, L. P.

ORG: none

20

26  
13+1

TITLE: Effect of chemical sensitization on the impurity spectral photosensitivity

SOURCE: AN SSSR. Komissiya po khimii fotograficheskikh protsessov. Uspekhi nauchnoy fotografii, v. 11, 1966. Khimiya fotograficheskikh emul'siy. Strukturnyye svoystva fotograficheskikh slojev (Chemistry of photographic emulsions. Structural properties of photographic films), 22-28

TOPIC TAGS: photographic emulsion, impurity center, photosensitivity

ABSTRACT: The purpose of the work was to extend data obtained earlier on the discrete nature of the impurity spectral photosensitivity by studying the spectrosensitometric properties of a Lippmann silver bromide emulsion chemically sensitized with hydrazine and thiourea, and also with salts of inert metals. The following characteristics common to all cases were observed: presence of discrete bands of impurity spectral photosensitivity, coincidence of the positions of these bands with the maxima of impurity spectral absorption, steeper increase of the sensitivity in the longwave region ( $\lambda < 460 \text{ m}\mu$ ) than in the shortwave region. Comparison of all the experimental data shows that there is no fundamental (qualitative) difference in the photographic action of the various chemical sensitizers. All the processes of chemical sensitization

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L 07170-67

ACC NR: AT6029515

studied lead to the formation of impurity centers from the corresponding metals, probably under the influence of the reducing function of gelatin. These centers then participate in the creation of the photosensitivity of the photographic emulsion. Authors thank M. A. Bart, who took part in the experimental part of the work. Orig. art. has: 4 figures and 1 table.

SUB CODE: 14/ SUBM DATE: none/ ORIG REF: 020

Card 2/2 *11 ZE*

ACC NR: AP7010713

SOURCE CODE: UR/0020/66/170/005/1121/1123

AUTHOR: Droun, Zh. L.; Chibisov, K. V. (Corresponding Member AN SSSR)

ORG: none

TITLE: Nature of centers of the latent image and latent fog

SOURCE: AN SSSR. Doklady, v. 170, no. 5, 1966, 1121-1123

TOPIC TAGS: STET image, photographic emulsion, optic density, spectrophotometry, photographic densitometer / SSF-4 spectrophotometer, IKS-12 spectrometer

SUB CODE: 14,20

ABSTRACT: The authors studied the differences between the formation and properties of centers of latent fog and the latent image. The study is based on an investigation of the kinetics of chemical aging and photolysis from data of direct observations which were compared with the pattern of the developed fog and image. Since the differential method for measuring optical densities at various moments of aging and photolysis was used for direct observation, information was obtained not only on the quantity of free silver formed, but also on its degree of dispersion since the latter affects the covering power. The study of chemical aging was based on a normal iodobromide emulsion with specimens taken after various periods (up to 128 hours). The specimens were diluted in a gelatin solution (1:20) and the optical den-

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UNC: 535.34

ACC NR: AP7010713

sities of the dry layers were measured (after desensitization in pinacryptol yellow) on an SSF-4 spectrophotometer at 710 mμ with respect to zero aging. These same layers were developed (Metol hydroquinone developer, 1:5) and measured at the same wavelength. The photolytic study was based on a silver bromide Lippmann emulsion (4x concentration). The emulsion layers were exposed to the light of a mercury lamp and darkening was measured with respect to the initial layer on Ye. A. Kirillov's unit at 710 mμ and on the IKS-12 spectrometer at 926 mμ. The layers were then developed (Metol hydroquinone developer, 1:20) and measured on a photoelectric densitometer. The resultant curves for aging (latent fog) and photolysis show pronounced periodicity. The periodic nature of these curves is retained on curves for the developed fog while development of the exposed layers results in an ordinary characteristic curve. Analysis of the experimental data shows that centers of latent fog have no catalytic activity in the useful aging region (up to  $S_{max}$ ), while the centers of the latent image, which accumulate rapidly during exposure, show high activity. This is the fundamental feature of a photographic emulsion responsible for selective development and the possibility of producing an image. Orig. art. has: 1 figure. [JPRS: 40,351]

Card 2/2

BROUN, Zh.L.

Investigating the use of light and heat action for increasing  
the general and spectral sensitivity of photographic layers.  
Zhur.nauch.i prikl.fot.i kin. 7 no.5:354-358 S-O '62.

(MIRA 15:11)

1. Nauchno-issledovatel'skiy institut fiziki Gosudarstvennogo  
universiteta imeni I.I.Mechnikova, Odessa.  
(Photographic sensitometry)

BROUNOV, Petr Ivanovich; USMANOV, R.F., redaktor-nostavitel'; VITEL'S, L.A.,  
otvetstvennyy red.; PISAREVSKAYA, V.D., red.; BRAYNINA, M.I., tekhn.  
red.

[Selected works] Izbrannye sochineniia. Leningrad, Gidrometeor.  
izd-vo. Vol.1. [Synoptic meteorology] Sinopticheskaya meteorologiya.  
1957. 302 p. (MIRA 11:2)  
(Meteorology)

BROUNOV, P. I. \_ Born 1852 St. Petersburg. Died 1927  
Founder of agricultural meteorology, est. the first agrometeorological  
service in the world.

BROUSEK, Jan, dr.

Deterioration of the video quality in switching to foreign  
television transmissions. Sdel tech 12 no.10:380,381 0 '64.

51- 4-3-25/30

AUTHORS: Brounshteyn, A.M. and Krasil'shchikov, L.B.

TITLE: Radiation Thermoelement with a Direct Visual Adjustment  
(Radiatsionnyy termoelement s pryamoy vizual'noy  
navedkoy.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol.IV, Nr.3,  
pp.412-413 (USSR)

ABSTRACT: Sighting of the receiving surface of a thermoelectric  
cell can be made either electrically or optically.  
A direct visual adjustment is necessary, for example  
in the case of low-temperature sources, where to  
exclude the radiation background it is necessary for  
the image of the source to cover completely the  
receiving surface of the thermoelectric cell. The  
authors developed a thermoelectric cell in which the  
receiving surface may be observed by means of an  
eyepiece, simultaneously with the image of the source.  
Adjustment is made by moving the optical system until  
the receiving surface intersects the source image.  
In the case when the source image is larger than the  
receiving surface the adjustment is made so that the  
receiving surface covers the central portion of the

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Radiation Thermoelement with a Direct Visual Adjustment.

source image. The thermocell tube (Fig.1) is in the form of a cylinder whose one base is a window (transparent also in the visible region) for introduction of the radiation studied, and the second is a plane parallel piece of glass. Carbon getter was placed in a bulb which formed a double-walled cylindrical vessel surrounding the thermocell tube. The eye-piece tube passed right through the getter bulb (Fig.2). The instrument was tested in the Main Geophysical Observatory by N.A. Vessart and found to be convenient in use. There are 2 figures.

ASSOCIATION: Main Geophysical Observatory imeni A.I. Vovaykov.  
(Glavnaya geofizicheskaya observatoriya im. A.I. Vovaykova.)

SUBMITTED: July 12, 1957.

1. Thermoelectric cells--Characteristics

Card 2/2

L 38653-65 RWT(1)/FCC GF

ACC NR: AP6025043

SOURCE CODE: UR/0362/66/002/003/0324/0325

AUTHOR: Brounshteyn, A. M.; Shekhter, F. N.

ORG: none

TITLE: All-Union conference on radiation heat transfer in the atmosphere

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 2, no. 3, 1966, 324-325

TOPIC TAGS: geophysic conference, meteorologic conference, radiative heat transfer, atmospheric radiation, cloud cover, atmospheric temperature, atmospheric humidity, upper atmospheric radiation, radiation intensity, weather forecasting, solar radiation, radiation measurement, meteorologic instrument

ABSTRACT: The second session of the All-Union seminar on the problem "Radiation Heat Transfer in the Atmosphere" was held at the Main Geophysical Observatory imeni A. I. Voyeykov (Leningrad) during the period 16-18 October 1965. Problems relating to the influence of cloud cover on the propagation of radiation in the atmosphere were discussed. Three groups of reports and communications were presented. Theoretical investigations. Ye. M. Feygel'son (Institute of Physics of the Atmosphere, Academy of Sciences USSR, Moscow) gave a report entitled "Mutual Influence of Cloud Cover and Radiation", giving the results of numerical experiments whose purpose was to analyze the temporal and vertical change of temperature, humidity and the radiation heat flux in the presence of a cloud cover. Also discussed was the inverse influence of radiation on the development of clouds. A joint study by L. M. Gradus

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UDC: 551.52

88  
71  
B

L 33653-66

ACC NR: AP6025043

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and Ye. M. Feygel'son (Institute of Physics of the Atmosphere, AN SSSR, Moscow) was entitled "Boundary Conditions for the Heat Exchange Equation in a Cloudy Atmosphere", in which they obtained a numerical solution of the problem of a vertical stationary temperature distribution when the atmosphere contains a cloud layer with specific parameters. Turbulent and radiation heat exchange were taken into account. B. Ye. Shneyerov and I. V. Mikhaylova (Main Geophysical Observatory, Leningrad) gave a review of foreign investigations on the influence of cloud cover in numerical experiments for determination of radiation heat fluxes and the temperature distribution in the atmosphere. The spectral distribution of outgoing long-wave radiation and an evaluation of the contribution of different absorption bands to the cooling of the atmosphere in the presence of a continuous cloud cover were considered in a report by V. G. Boldyrev (World Meteorological Center, Moscow); Statistical investigations. L. R. Rakipova (Main Geophysical Observatory, Leningrad), in a report "On the Statistical Relationships Between Outgoing Radiation and the Meteorological Parameters of the Atmosphere", on the basis of extensive data demonstrated that some of the correlations between the outgoing radiation of the earth - atmosphere system and various meteorological parameters of the atmosphere are extremely strong. A report by S. I. Sivkov (Main Geophysical Observatory, Leningrad), "On Computations of the Radiation Regime on the Basis of Cloud Cover Characteristics", described some ways to refine existing and developing new methods for computing the regime of short-wave radiation in the cloudy atmosphere for periods of different duration in relation to the problems of forecasting weather. B. M. Gal'perin (Leningrad), in a study entitled "Influence of the Cloud Cover on Short-Wave

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L 33653-66

ACC NR: AP6025043

10

Radiation and the Daytime Radiation Balance", attempted to establish a relationship between the radiation characteristics of the cloudy atmosphere and temperature and humidity of the air near the earth's surface. Experimental studies. In a report entitled "Some Results of Study of the Radiation Properties of the Cloud Cover Using Data from Actinometric Radiosonde Observations", G. P. Kostyanov (Central Aerological Observatory, Moscow), described the vertical profiles of radiation fluxes and fluxes of radiation in the cloudy atmosphere for nighttime. Analysis of the results make it possible for the author to estimate the value of the albedo of the upper cloud boundary. A report by V. L. Gayevskiy, Yu. I. Rabinovich and A. I. Reshetnikov (Main Geophysical Observatory, Leningrad), entitled "Some Results of Measurements of the Albedo of Stratus and Stratocumulus Clouds in the Window 8-12  $\mu\text{m}$ ", was devoted to the method for making aircraft measurements with a selective radiometer and estimating cloud albedo for descending radiation in the "atmospheric window". N. I. Coysa (Scientific Research Hydrometeorological Institute, Kiev), in a report entitled "The Method and Preliminary Results of Aircraft Measurements of the Radiation Balance in the Cloudy Atmosphere", for the most part dealt with the method for making measurements of albedo and the radiation balance of clouds. L. I. Chapurskiy (Leningrad), in a report on "Spectral Fluxes of Radiation in the Region 0.3-2.5  $\mu\text{m}$  Reflected from Clouds", presented extensive data on the spectral reflectivity of clouds and snow for solar radiation. [JPRS: 35,809]

SUB CODE: 04, 20 / SUBM DATE: none

LS

Card 3/3

ACC NR: AT7004430

SOURCE CODE: UR/2531/66/060/184/0022/0030

AUTHOR: Beritashvili, B. Sh.; Brounshteyn, A. M.; Kazakova, K. V.

ORG: None

TITLE: Dependence of the integral function of transmission through the atmosphere on the temperature of black radiation

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 184, 1966. Aktinometriya, atmosfernaya optika i ozonometriya (Actinometry, atmospheric optics and ozonometry), 22-30

TOPIC TAGS: atmospheric radiation, atmospheric temperature, atmospheric water, black body radiation, radiation effect, radiation intensity, radiation physics, integral function "

ABSTRACT: The dependence of the integral function of transmission of longwave radiation on the temperature of black radiation is reviewed. The method used to investigate the relationship between the integral function of transmission and radiator temperature was based on that described in A. M. Brounshteyn's "Experimental Investigation of the Integral Function of Transmission," Gidrometeoizdat, Leningrad, 1963, and utilized a telescopic radiometer, a vacuum radiation thermometer element with two separate receiving areas as the receiver, a heated black radiator and a black cavity cooled to the temperature of liquid nitrogen, serving as the

Card 1/2

UDC: none

ACC NR: AT7004430

"radiation screen." The requirement for non-selectivity in the receiver is noted, as is the requirement for accuracy in maintaining the sequence with which the elements are contained in the measurement system: black source - layer of atmosphere being investigated - non-selective radiation receiver, in which the only selective element is the atmosphere. Any random, selective element making its appearance in the sequence will distort the results. Measurements were made in Voyeykovo, near Lenin-grad, in the summers of 1962 and 1963, with radiators set up 59.7 meters from the teleopic radiometer. The results are plotted and preliminary data for the special case when the amount of water deposited is almost 0.05 cm are presented. Linear changes in the integral function of transmission, the magnitudes of which equal 27% per 100° of change in radiation temperature, are obtained for the 10° to 80°C range. The connection between the results obtained and recently published data on the transmission function, obtained by the two radiators method, is discussed. Work on refining the data is in progress and will be published in the form of correction factors for data already published. Senior Technicians E. S. Kokko and V. S. Oguryeyev participated in taking the measurements and processing the data, and the authors wish to express their appreciation to them. Orig. art. has: 10 formulas and 3 figures. [29]

SUB CODE: 04/SUBM DATE: None/ORIG REF: 008/OTH REF: 009

Card 2/2

PLANE 1 BOOK EXPLOITATION  
SON/4127  
SON/2-3-100

Local legend. Olav's grave located in the Obnitskaya cemetery.

Isotodermallye reaktivnykh protsessov (Investigation of Radiation Processes).  
Leningrad, Gidrometeoizdat, 1960. 197 p. (Series: Itai Trudy, 77. 20)

Estimate all inserted. 1,000 copies printed.

Additional Sponsoring Agency: USSR. Claims are apparently of domestic origin and are not  
 a liability.

Ed. (Title page): K.S. Sulttan, Doctor of Physics and Mathematics, and V.L. Ozerovskiy, Candidate of Geography; Ed. (Inside book): L.P. Zhidkov; Tech. Ed.: N.I. Bryukina.

**PURPOSE:** The publication is intended for meteorologists and students of hydro-meteorology at higher technical schools.

CONTENTS. This issue of the Transactions of the Main Geophysical Observatory Institute of the USSR Academy of Sciences contains 27 articles on ionospheric and the radiation processes occurring in the ionosphere and on the active surface. Individual articles on the following topics are included: Ionospheric dispersion in a two-layered atmosphere; investigation of splitting conditions under a cloudy and cloudless sky; investigation of long-wave radiation of the ionosphere, electron temperature profiles, electron density profiles for measuring the spectral properties of long-wave radiation of the ionosphere and the underlying surface, and the properties of long-wave atmospheric radiation upon the astronomical elements. References accompany each article.

Ushakovskii, S.D. Ionospheric Dispersion in Two-Layered Atmosphere. 17

Levan, V.K., A.Ya. Perep'kin, and Ye.P. Rybdom. Brightness of a Glowless  
Arc in a Two-Parameter Model of the Atmosphere.

Forrest, J. H., Jr. Mean Daily Values of the Sea Albedo  
Polygons, Tex. Investigation of the Meteorological Distance of  
Visibility During Rainfall

**Pol'yakov, T. A., and V. D. Tretyakov.** Investigation of the Meteorological Image of Visibility during a Snowfall.

Kellogg, I. L. Microstructure and Transparency of Biofilms

**Pyromolybdenum, N.F. Spectral Variation of Ground Components in the Visible and Near Infrared Region of Spectrum**

Verbitskiy, V.I. Device for Measuring and Recording the Transparency of the Atmosphere

Gayenskiy, V.L. Investigation of the Long-Wave Radiation of the Atmosphere 86

**Bromobenzene, A.M. Black Radiator With a Large Aperture**

Tagliacozzi, T.D., and V.I. Goryshin. Electronic Temperature Controllers.

Ernst L. Beshikov, L.B., and O.I. Golikova. Photometric Devices for Measuring Spectral Coefficients of Brightness

**Pakhovets, Yu. I. Aircraft Instruments for Measuring Spectral Optical Characteristics of Atmosphere and Underlying Surface**

# **SHIL'NITSKY, N.I. Application of Interference Filters of the Fabry-Pérot Interferometer Type for Simplified Spectral Measurements of Direct Solar Radiation in the Ultraviolet Region of Spectrum**

**Erastl'senkov, L.S. Problem of Sighting With Lens Receivers Through a Turbid Atmosphere**

85365

9,6000 (1012,1024,1099) S/120/60/000/005/043/051  
E192/E382

AUTHORS: Krasil'shchikov, L.B. and Brounshteyn, A.M.  
TITLE: Potentiometer Method of Measuring Small emf by means of a Photoelectro-optical Amplifier

PERIODICAL: Prihory i tekhnika eksperimenta, 1960, No. 5, p. 140

TEXT: The potentiometer method of measuring low voltages by means of a photoelectro-optical amplifier can be used for the recording of emf by employing, for instance, the electronic potentiometer, type ЭПН-09 (EPP-09). For this purpose the voltage taken from the slide wire of the potentiometer should be reduced by the divider and then applied to the input circuit of the amplifier. The output voltage of the amplifier should now be applied directly to the input terminals in Fig. 2. The division ratio of the potentiometer shown in Fig. 2. The division ratio of the potentiometer decreases  $(R_1 + R_2)/R_2$  times; the signal applied to the amplifier of the potentiometer should be increased by the same amount in order to preserve the same operating condition

SUB

Card



3,5150

S/169/62/000/003/055/098  
D228/D301

AUTHOR: Brounshteyn, A. M.

TITLE: A method and some results of measuring the function of the passage of long-wave radiation (Theses)

PERIODICAL: Referativnyy zhurnal. Geofizika, no. 3, 1962, 27, abstract 3B222 (V sb. Aktinometriya i atmosfery. optika, L., Gidrometeoizdat, 1961, 248)

TEXT: A method and an apparatus were developed for measuring the integral function of the passage of long-wave radiation in horizontal homogeneous layers of air under field conditions with artificial sources of long-wave radiation, as well as for measuring the natural radiation of these layers. The values of the passage function under winter conditions for layers of about 100 m in thickness were derived together with some tentative results of measuring the relation of the passage function to the temperature of long-wave radiation. [Abstracter's note: Complete translation.]

Card 1/1

BROUNSHTEYN, A.M.; KRASIL'SHIKOV, L.B.

Emissivity measurements of opaque bodies. Trudy GGO  
no.118:42-50 '61. (MIRA 14:8)  
(Radiation—Measurement)

1ST AND 2ND COLUMNS																										3RD AND 4TH COLUMNS																									
PROCESSES AND PROPERTIES INDEX																																																			
<div style="display: flex; justify-content: space-between;"> <span>CA</span> <span>12</span> </div> <p style="text-align: center;">High-frequency method for dewatering oil. H. J. Brounshel, <i>Energ. Byull.</i> 1946, No. 1, 26-30. A set-up is described for dewatering and desalting petroleum. M. Hosh.</p>																																																			
ASM-11A METALLURGICAL LITERATURE CLASSIFICATION																																																			
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<div style="display: flex; justify-content: space-between;"> <span>CA</span> <span>22</span> </div> <p>Desalting oils containing crystalline salts. ...  <i>Neftyanoe Khoz.</i> 24, No. 2, 39-43 (1946).              The methods now employed for removing salts from oils              are not suitable for removing already crystal. salts. These              salts are formed when the oils are dewatered by evapn.              By the time the oil is brought to the refinery for further              treatment the salt crystals are coated by an org. film,              and the H<sub>2</sub>O added prior to elec. desalting cannot dissolve              the crystals. Autoclaving salt-contg. oils to which was              added H<sub>2</sub>O destroyed the protective film; the salts dis-              solved in the H<sub>2</sub>O, and were subsequently completely re-              moved by elec. dewatering. M. Horsch</p>																																																			
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BROUNSHTEYN, F. I.      Cand. Tech. Sci.

Dissertation: "High-Frequency Method for Dewatering and Desalting Petroleum."  
Moscow Order of the Labor Red Banner Petroleum Inst imeni Academician I. M. Gubkin,  
15 Apr 47.

SO: Vechernyaya Moskva, Apr, 1947 (Project #17836)

BROUNSHTEYN, B.I.

Electric dehydration and desalting of oil. Trudy MHI no.7:144-170  
'47. (MIRA 12:1)

(Petroleum--Refining)

BRONSHTEIN, B. I.

## USSR .

✓Method of calculation of column for thermal regeneration of chemisorbent solutions. B. I. Bronshtein (Leningrad Research Inst. for Petroleum Refining). *J. Appl. Chem. U.S.S.R.* 25, 1107-13(1952)(English translation); *Zhur. Priklad. Khim.* 25, 1042-9(1952).—Material and heat balance equations are derived for the thermal regeneration of chemisorbent solns. in batch and continuous equipment. The use of plate columns for soln. regeneration is shown to be economical with respect to steam consumption. A graphical method is derived for the calcn. of the no. of theoretical plates required for a given sepn. I. Leibson.

BROWNISH IV, B. I.

Spectra of the reaction of substituted anilines of a series  
line substances B. I. to B. IV, and V.

1. The reaction of substituted anilines of a series  
line substances B. I. to B. IV, and V.  
2. The reaction of substituted anilines of a series  
line substances B. I. to B. IV, and V.  
3. The reaction of substituted anilines of a series  
line substances B. I. to B. IV, and V.  
4. The reaction of substituted anilines of a series  
line substances B. I. to B. IV, and V.  
5. The reaction of substituted anilines of a series  
line substances B. I. to B. IV, and V.

P. M. MT



*BROUNSHTEYN, B. I.*

**KHACHKURUZOV, G.A.; BROUNSHTEYN, B.I.**

Calculation of the thermodynamic functions of ideal gases the  
molecules of which are in the  $2\sigma$  state. Part 1. Zhur. fiz. khim.  
30 no.11:2412-2423 N '56. (MLBA 10:4)

1. Institut prikladnoy khimii, Leningrad.  
(Gases, Kinetic theory of)

BROUNSHTEYN, B. I.

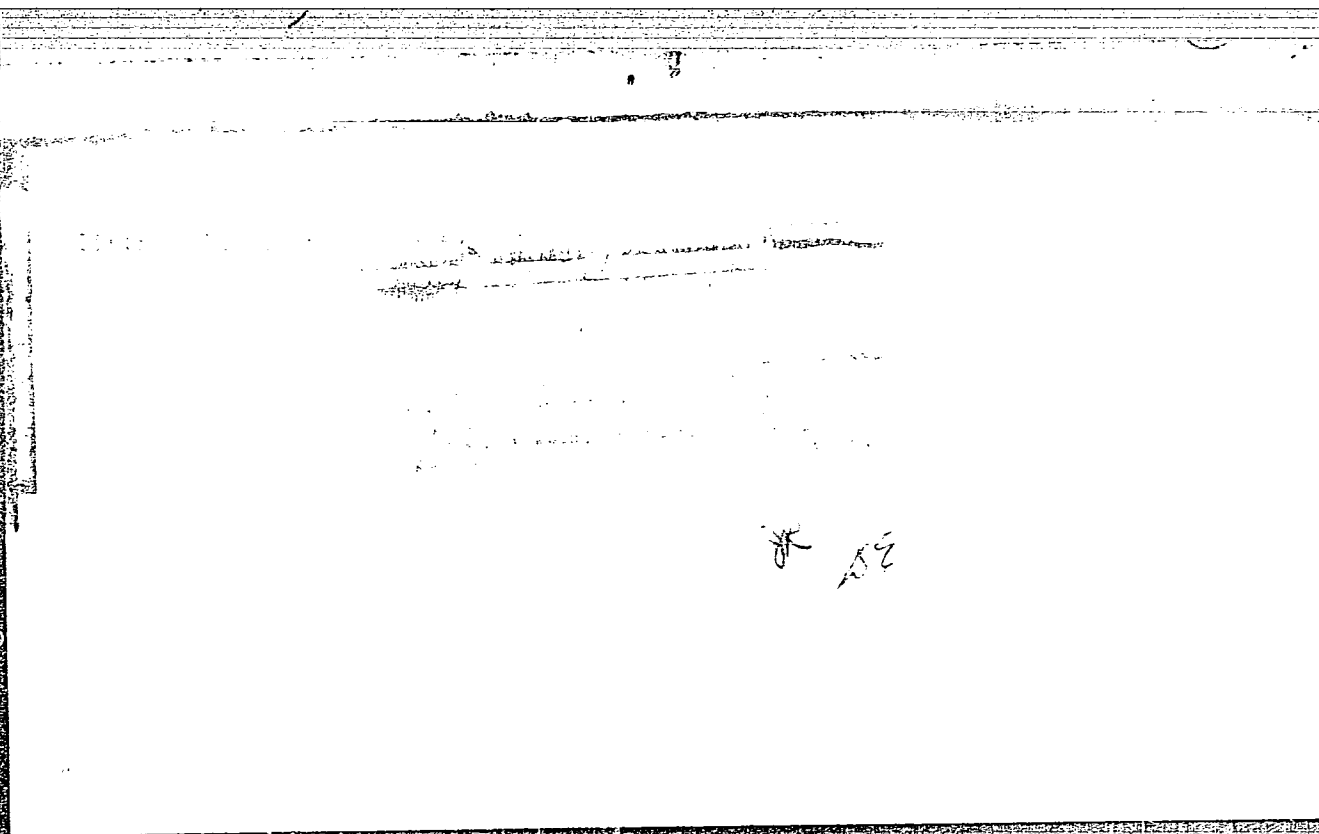
KHACHEKURUZOV, G.A.; BROUNSHTEYN, B.I.

Calculation of thermodynamic functions of ideal diatomic gases, the molecules of which are in the  $\Lambda\Pi$ -state. Part 2: Particular cases. Illustrations of the calculations. Zhur.fiz.khim. 31 no.4:770-779 Ap '57. (MIRA 10:7)

1. Institut prikladnoy khimii Leningrad.  
(Gases, Kinetic theory of ) (Spectrum, Molecular)  
(Thermodynamics)

"APPROVED FOR RELEASE: 08/22/2000

CIA-RDP86-00513R000307020017-1



APPROVED FOR RELEASE: 08/22/2000

CIA-RDP86-00513R000307020017-1"

An evaluation of the accuracy of the Gordon and Barnes  
approximation method for calculating the thermodynamic  
functions of ideal gases at: ~~high temperatures~~

The accuracy of the Gordon and Barnes approximation method for calculating the thermodynamic functions of ideal gases at high temperatures is evaluated. The method is compared with the exact values of the thermodynamic functions calculated by the method of the National Bureau of Standards. The results show that the method is accurate to within 1% for temperatures up to 1000 K and for pressures up to 10 atm. The method is also compared with the results of the method of the National Bureau of Standards for the calculation of the thermodynamic functions of ideal gases at high temperatures. The results show that the method is accurate to within 1% for temperatures up to 1000 K and for pressures up to 10 atm.

SCV/76-33-6-20/44

5(4)

AUTHORS:

Brounshteyn, B. I., Yurkov, G. N.

TITLE:

Computation of Thermodynamic Functions of Diatomic Ideal Gases, the Molecules of Which Are in the  $^3\Pi$  Electron State (Vychisleniye termodinamicheskikh funktsiy dvukhatomnykh ideal'nykh gazov, molekuly kotorykh nakhodyatsya v  $^3\Pi$  elektronnom sostoyanii)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 6, pp 1289-1298 (USSR)

ABSTRACT:

A computation method was worked out, which is more accurate than the one suggested by Gordon (Ref 1), and which serves for the computation of thermodynamic functions of diatomic ideal gases, the molecules of which are in the  $^3\Pi$  electron state (regular and inverse), with an arbitrary bond type according to Hund. The two cases of an a and b bond according to Hund (of high and low temperature) are considered, and it is stated inter al that a correction according to Budó (Ref 2) into the equation (1) by Hill and van Vleck (Ref 3) leads to a wrong derivation; hence, this correction

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SOV/76-33..6-20/44  
Computation of Thermodynamic Functions of Diatomic Ideal Gases, the  
Molecules of Which Are in the  $\Sigma$  Electron State

must be rectified. Some new and more simple computation equations (than those by Gordon) are derived (45) - (52); (9), (34) - (36) and on the strength of the example of the molecules  $C_2$  and  $TiO$  the values of free energy and entropy are computed; they are furthermore computed according to two other methods and compared (Table 2). There are 2 tables and 10 references, 3 of which are Soviet.

ASSOCIATION: Institut prikladnoy khimii, Leningrad  
(Institute of Applied Chemistry, Leningrad)

SUBMITTED: November 13, 1957

Card 2/2

BROUNSHTEYN, B.I.; GURVICH, L.V.; YUNGMAN, V.S.; YURKOV, G.N.

Statistical methods of computing the thermodynamic functions of ideal gases. Report No. 1: General relationships of statistical thermodynamics for ideal gas. Trudy GIFKH no.42:3-10 '59. (MIRA 13:10)  
(Thermodynamics) (Gases)

BROUNSHTEYN, B.I.; GURVICH, L.V.; YUNGMAN, V.S.; YURKOV, G.N.

Statistical methods of computing the thermodynamic functions of ideal gases. Report No. 2: Expression for the statistical sum based on the states of diatomic molecules. Method of direct summation based on the levels of diatomic molecules. Trudy GIPKH no.42:11-20 '59.  
(MIRA 13:10)

(Gases)

(Thermodynamics)



BROUNSHTEYN, B.I.; GURVICH, L.V.; YUNGMAN, V.S.; YURKOV, G.N.

Statistical methods of computing the thermodynamic functions of ideal gases. Report 3: Approximate methods of calculating the statistical sum from the rotational states of diatomic molecules. Trudy GIPKH no.42:21-50 '59. (MIRA 13:10)

(Thermodynamics)

(Gases)

S/058/61/000/004/009/042.  
A001/A101

11.5300

AUTHORS: Brounshteyn, B.I., Yurkov, G.N.

TITLE: Determination of effective values of oscillation constants of diatomic molecules for calculating thermodynamic functions of perfect gases at high temperatures

PERIODICAL: Referativnyy zhurnal. Fizika, no 4, 1961, 160, abstract 4V69 ("Sb. tr. Gos. in-ta prikl. khimii", 1960, no 16, 29 - 42)

TEXT: The authors developed a method of approximate calculation of higher oscillation levels based on the known values of lower levels and experimentally found value of the molecule dissociation energy. They propose a method of determining "effective constants" which assure the greatest precision of calculating thermodynamic functions at the given numbers of constants. "Effective constants" proved to be dependent on temperature. The method is exemplified by calculating molecules of  $H_2$  and HF.

[Abstracter's note: Complete translation.]

Card 1/1

JB

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77635  
SOV/80-33-2-10/52

AUTHORS: Bezdel', L. S., Brounshteyn, B. I.

TITLE: Concerning Some Laws Governing Extraction in Systems:  
Liquid-Liquid

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 2,  
pp 323-332 (USSR)

ABSTRACT

The laws governing the coefficient of extraction were investigated in systems: water (continuous phase) - acetic acid - benzene (disperse phase), and water (continuous phase) - benzoic acid - benzene (disperse phase). The experiments consisted in passing drops of benzene through a column (with or without packing) filled with the water/acetic acid or water/benzoic acid mixtures and determining the values of the coefficient of extraction by means of an equation which took into account the concentrations of the extractable substance at the top and the bottom of the column, the rate of feed of the disperse phase, the space velocity of the continuous phase, and other parameters. The amount of the extracted substance per unit of time can

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Concerning Some Laws Governing Extraction  
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be expressed by the equations (1) or (2):

$$dM = K_x (x - x_p) dS \quad (1)$$

$$dM = K_y (y - y_p) dS, \quad (2)$$

where  $dS$  is the element of the interfacial area;  
 $x$  is the concentration of the extractable substance  
in the disperse phase;  $x_p$  is the concentration of the  
extractable substance in the disperse phase in equi-  
librium with the concentration of the substance in the  
continuous phase;  $y$  is the concentration of the extract-  
able substance in the continuous phase;  $y_p$  is the  
concentration of the extractable substance in the  
continuous phase in equilibrium with the concentration  
of the substance in the disperse phase;  $K_x$  is the  
general coefficient of extraction in relation to the  
continuous phase.  $K_x$  and  $K_y$  can be expressed by specific  
coefficients of extraction  $k_c$  and  $k_d$  by Eqs. (3) and  
(4).

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Concerning Some Laws Governing Extraction  
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$$K_x = \frac{1}{\frac{1}{k_d} + \frac{\psi}{k_c}}, \quad (3)$$

$$K_y = \frac{1}{\frac{1}{k_r} + \frac{1}{\psi k_d}}, \quad (4)$$

where  $\psi = \frac{x_p}{y}$  is the coefficient of distribution  
 $k_d$  is the specific coefficient of extraction in the  
disperse phase;  $k_c$  is the specific coefficient of  
extraction in the continuous phase. When the value of  
 $\psi$  is small, then

$$\frac{1}{k_d} \gg \frac{\psi}{k_c}, \quad (5)$$

$$K_x \approx k_d, \quad K_y \approx \psi k_d, \quad x_p = x_i,$$

where  $x_i = \psi y$  is the concentration of the extractable  
substance on the phases boundary on the side of the  
disperse phase. When the value of  $\psi$  is high, then

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SOV/80-55-1-10/50

disperse phase. When the value of  $\psi$  is high, then

$$\frac{1}{k_c} \gg \frac{1}{\psi k_d} \quad (6)$$

$$K_y \approx k_c, K_x \approx \frac{k_c}{\psi}, y_1 \approx y_i \quad (7)$$

where  $y_1 = \frac{x}{\psi}$  is the concentration of the extractable substance on the phase boundary on the size of the continuous phase. To obtain the total amount of the substance extracted per unit of time in a counter flow column, Eq. (1) and (2) are integrated over the total height  $H$  of the column and give Eq. (8) and (9):

$$M = k_c \Delta x_{cp} \sigma H, \quad (8)$$

$$M = k_c \Delta y_{cp} \sigma H. \quad (9)$$

where  $f$  is the area of the cross section and  $\sigma$  is the area of the boundary surface per volume unit of the column;  $\Delta x_{cp}$  and  $\Delta y_{cp}$  are given by Eq. (10)

$$\Delta x_{cp} = \frac{\Delta x_n - \Delta x_p}{\ln \frac{\Delta x_n}{\Delta x_p}} \quad (10)$$

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Concerning Some Laws Governing Extraction  
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SOV/NO-00-00-10/02

and (11); also  $\Delta x = x - x_p$ , and  $\Delta y = y - y_p$ .  
The indices "H" and "B" indicate the bottom and the  
top of the column, respectively.

$$\Delta y_{cp} = \frac{\Delta y_H - \Delta y_B}{\ln \frac{\Delta y_H}{\Delta y_B}} \quad (11)$$

Equations (9) and (10) may be used for any  $\psi$  value  
when this coefficient does not depend on  $x$  and  $y$ .  
Otherwise the specific coefficients in the above  
equations must be replaced by the general coefficients  
 $K_x$  and  $K_y$ . The specific area  $\sigma$  is proportional  
in the first approximation to the feed space velocity  
 $V_d$ . Hence, Eq. (8) and (9) can be written as (12)  
and (13) where  $k_{pd}$  and  $k_{pe}$  are expressed by Eq. (13):

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Concerning Some Laws Governing Extraction  
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$$\left. \begin{aligned} \frac{M}{V_d} &= k_{pd} \Delta x_{cp} H \\ \frac{M}{V_c} &= k_{pc} \Delta y_{cp} H \end{aligned} \right\} \quad (12)$$

$$\left. \begin{aligned} k_{pd} &= k_d \frac{q_d}{V_d} \\ k_{pc} &= k_c \frac{q_c}{V_d} \end{aligned} \right\} \quad (13)$$

The coefficients  $k_{pd}$  and  $k_{pc}$  are derived coefficients of extraction for the dispersed and continuous phases. The mass  $M$  of the extractable substance can be expressed by the difference of the concentrations of the substance at the inlet of the column ( $x_u$ ) and at the outlet ( $x_B$ ). Hence, Eq. (12) becomes (14):

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$$\left. \begin{aligned} k_{pd} &= \frac{x_u - x_B}{H \Delta x_{cp}} \\ k_{pc} &= \frac{y_u - y_B}{H \Delta y_{cp}} \cdot \frac{V_c}{V_d} \end{aligned} \right\} \quad (14)$$



Concerning Some Laws Governing Extraction  
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where  $V_c$  is the space velocity of the continuous phase. Drops of the disperse phase with diameter  $d$  rise in the continuous phase with a linear velocity  $u$ . Hence, the rate of feed  $V_d = \frac{1}{6} \pi d^3 u n$ , and  $\sigma = \pi d^2 n$ , where  $n$  is the number of drops per volume unit of the column, and the factor of proportionality between the coefficients of extraction in Eq. (13) can be expressed by Eq. (15):

$$\frac{\sigma}{V_d} = \frac{6}{u d}. \quad (15)$$

The values of the derived coefficients of extraction were calculated by Eq. (13) and (15). The mean diameter of the drops was determined photographically or by counting the number of drops in a given volume. It was found that the vertical velocity of the benzene drops as well as the value of  $k_d$  increased with increasing diameter of the drops up to  $d = 5$  mm, and then remained practically constant up to  $d = 12$  to  $13$  mm. It

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Concerning Some Laws Governing Extraction  
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was assumed that the relationship between  $k_d$  and the diameter and vertical velocity of the drops is expressed by Eq. (17).

$$k_d = A \cdot Re^n. \quad (17)$$

The study of the system with a small value of the coefficient of distribution (water as continuous phase - acetic acid - benzene as disperse phase) in columns with and without packing showed that  $\log k_d$  was a linear function of  $\log Re$  (up to  $Re = 200$ ). The same was true for the system with a high value of the coefficient of distribution (water as continuous phase - benzoic acid - benzene as disperse phase). It was also found that the interchange of phases (dispersion of benzene in water, or dispersion of water in benzene) had little influence on the coefficient of extraction, and that the latter remained practically constant in all the systems investigated when the rate of water and benzene feeds was increased 3 to 4-fold. The present study was made in 1952. There are 3 figures;

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Concerning Some Laws Governing Extraction  
in Systems: Liquid-Liquid

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SOV/80-33-2-10/52

ASSOCIATION: 3 tables; and 5 references, 4 German, 1 Soviet.  
All-Union Scientific Research Institute for Petro-  
chemical Processes (Vsesoyuznyy nauchno-issledovatel'skiy  
institut neftekhimicheskikh protsessov)

SUBMITTED: June 6, 1958

Card 9/9

BROUNSHTEYN, B. I.

Method of calculating the height of countercurrent packed and plate columns for process involving the dissolution of a one-component dispersed phase. Zhur. prikl. khim. 33 no.9:2056-2062 S '60.

(MIRA 13:10)

(Packed towers)

(Plate towers)

24813

S/081/61/000/011/002/040

B105/B203

24.611D

AUTHORS: Brounshteyn, B. I., Yurkov, G. N.

TITLE: Determination of effective values of vibration constants of diatomic molecules for calculating thermodynamic functions of ideal gases at high temperatures

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 11, 1961, 10", abstract 11568 (Sb. tr. Gos. in-ta prikl. khimii, 1960, vyp. 46, 29 - 42)

TEXT: The authors describe a method of calculating the coefficient of the extrapolation equation for the energy of high vibrational levels of a diatomic molecule conjugated with the equation for the energy of experimentally determined lower levels, which equation corresponds to the demand for convergence of the vibrational levels to the limit of dissociation. They also suggested a method of approximation of the energy of vibrational levels by means of a power function of the quantum number  $\nu$  which is based on the use of the method of least squares by introducing statistical weights for each level. The values of effective Card 1/2

24813

S/081/61/000/011/002/040  
B105/B203

Determination of...

vibration constants obtained by the method suggested depend on temperature. It is assumed to be convenient to utilize the thus found approximation equations for the energy of vibrational levels when making a great number of calculations of thermodynamic functions in the given interval of temperatures, or for estimating the calculation errors. Examples are given for calculations of  $H_2$  and HF. [Abstracter's note: Complete translation.]

Card 2/2

S/081/61/000/012/004/028  
B105/B202

AUTHORS: Brounshteyn B. I., Yurkov, G. N.

TITLE: Statistical methods of calculating thermodynamic functions of ideal gases. Communication IV. Approximation methods for calculating the statistical sum of the vibrational and rotational levels of diatomic molecules

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 12, 1961, 62, abstract 126409 (Sb. tr. Gos. in-ta prikl. khimii, 1960, vyp. 46, 3-14.)

TEXT: In continuation of a paper published earlier (Communication III, RZhKhim, 1960, No. 12, 46007) the authors describe approximation methods for calculating statistical sums of the vibrational and rotational levels of the energy of the molecules in  $^1\Sigma$ -,  $^2\Sigma$ -,  $^3\Sigma$ -,  $^2\Pi$ - and  $^3\Pi$ -states. The calculations were made by the method of A. R. Gordon, C. Barnes ("J. Chem. Phys.", 1933, 1, 297) for all given states, by the method of L. S. Kassel ("J. Chem. Phys.", 1933, 1, 576; "Chem. Rev.", 1936, 18, 277) for the  $^1\Sigma$  electron state, and by the method of D. Mayer, M. Geppert-Mayer

Card 1/2

Statistical methods of calculating ...

S/081/61/000/012/004/028  
B105/B202

(Statistische Mechanik. IL, 1952) for the  $^1\Sigma$  state. The authors obtained calculation formulas. It is emphasized that the generalization of the methods of Kassel and Mayer - Geppert-Mayer for other electron states is analogous to the mentioned calculations of these states made by the method of Gordon and Barnes. [Abstracter's note: Complete translation.]

Card 2/2



BROUNSHTEYN, B.I.; BYKOVA, L.G.; POKORSKIY, V.N.; USTRAYKH, M.A.;  
YABLOCHKINA, M.N.

Experimental check of the method of calculating the height of  
countercurrent packed and plate columns in processes involving  
the solution of a one-component disperse phase (the system toluene -  
diethylene glycol). Zhur.prikl.khim. 34 no.3:548-557 Mr '61.  
(MIRA 14:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh  
protseessov.

(Plate towers) (Packed towers)

BROUNSHTEYN, B.I.

Determination of the optimum number of terms in the asymptotic expression for the statistical sum based on rotational energy levels of diatomic molecules. Zhur. fiz. khim. 35 no.7:1558-1566 J1 '61. (MIRA 14:7)

1. Gosudarstvennyy institut prikladnoy khimii, Leningrad.  
(Molecular rotation)

PHASE I BOOK EXPLOITATION

SOV/6260

12  
Gurvich, Lev Veniaminovich, Georgiy Akopovich Khachkuruzov, Vadim Andreyevich Medvedev, Inessa Veniaminovna Veyts, Georgiy Andreyevich Bergman, Vladimir Stepanovich Yungman, Nina Petrovna Rtishcheva, Lidiya Fedorovna Kuratova, Georgiy Nikolayevich Yurkov, Amaliya Abramovna Kane, Boris Fedorovich Yudin, Boris Isidorovich Brounshteyn, Viktor Feodosyevich Baybuz, Valeriy Aleksandrovich Kvividze, Yevgeniy Aleksandrovich Prozorovskiy, and Boris Aleksandrovich Vorob'yev.

Termodinamicheskiye svoystva individual'nykh veshchestv; spravochnik v dvukh tomakh. tom 1: Vychisleniye termodinamicheskikh svoystv; tom 2: Tablitsy termodinamicheskikh svoystv (Thermodynamic Properties of Individual Substances; Reference Book in Two Volumes. v. 1: Calculation of Thermodynamic Properties; v. 2: Tables of Thermodynamic Properties). 2d ed., rev. and enl. Moscow, Izd-vo AN SSSR, 1962. 1161 and 916 p. 4000 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR. Institut goryuchikh iskopayemykh; and Gosudarstvennyy komitet Soveta Ministrov SSSR

Card 1/23

Thermodynamic Properties (Cont.)

SOV/6260

po khimii. Institut prikladnoy khimii.

Resp. Ed.: V. P. Glushko, Academician, L. V. Gurvich, G. A. Khachkuruzov, I. V. Veyts, and V. A. Medvedev; Ed. of Publishing House: K. P. Gurov; Tech. Ed.: V. G. Laut.

PURPOSE: This reference book may be used in scientific-research and experimental-design work in institutes, design offices, and schools of higher education, as well as for training specialists in chemical thermodynamics and thermal physics.

COVERAGE: Volume 1 of this work deals with methods for calculating thermodynamic properties and with the selection of constants required for the calculations. Volume 2 contains tables of thermodynamic properties (reduced thermodynamic potential, entropy, enthalpy, and the logarithm of the dissociation or ionization constants of equilibrium) compiled, where data were lacking, on the basis of published and unpublished material from a number of Soviet research institutes. Thermodynamic properties for the ideal gas

Card 2/9

Thermodynamic Properties (Cont.)

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state are presented in table form for 335 gases, 44 liquids, and 45 solids compounded from 33 chemical elements and their isotopes, viz.: H, D, T, He, Li, Be, B, C, N, O, F, Ne, Na, Mg, Al, Si, P, S, Cl, Ar, K, Ca, Br, Kr, Re, Sr, Zr, I, Xe, Cs, Ba, Hg, and Pb. Thermodynamic properties are given for the following 22 gases in the range from room temperature to 20,000°K: H, H<sup>+</sup>, H<sup>-</sup>, O, O<sup>+</sup>, O<sub>2</sub>, O<sub>3</sub>, OH, OH<sup>+</sup>, H<sub>2</sub>O, N, N<sup>+</sup>, N<sub>2</sub>, NO, NO<sup>+</sup>, C, C<sup>+</sup>, CO, CO<sup>+</sup>, and e<sup>-</sup>; for the 14 least stable gases up to 4000°K; and for the remaining 299 gases up to 6000°K. Virial coefficients for 34 gases are also given up to 6000°K.

S/780/62/000/005/001/002  
1060/1243

AUTHORS: Bezdel', L.S. and Brounshteyn, B.I.

TITLE: Purification of gasoline from hydrogen sulfide by phosphate

SOURCE: Vsesoyuznyy nauchno-issledovatel'skiy institut nefte-khimicheskikh protsossov. Trudy. no.5. Leningrad, 1962. Protssesy i apparaty neftekhimicheskoy tekhnologii, 205-217

TEXT: The purpose of this work was to determine the equilibrium distribution of  $H_2S$  between gasoline and phosphate solutions and to study the kinetics of the extraction process.  $K_3PO_4$  solutions of various concentrations, with varying amounts of  $K_2HPO_4$  added were studied. Solutions of isooctane (alkylate) distilled between 103-116°C were used in place of gasoline because of their identical behavior. Equilibrium concentrations of hydrogen sulfide in alkylate at 20°C were also determined in the system alkylate-hydrogen sulfide-solution of  $K_3PO_4$  with  $K_2HPO_4$ . Equilibrium concentrations of

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S/780/62/000/005/001/002  
I060/I242

Purification of gasoline...

$H_2S$  in alkylate are extremely low - of the order of hundredths and thousandths of 1% which corresponds to a high degree of purification of gasoline. A higher degree of purification can be achieved with a 1 M solution of  $K_3PO_4$  and with a 2 M solution. Hydrogen sulfide was extracted from alkylate by a solution of  $K_3PO_4$  in a counterflow column. The extraction coefficient of alkylate does not depend on molarity and on the degree of saturation of the solution  $K_3PO_4$ , KOH and of a mixture of  $K_3PO_4$  and  $K_2HPO_4$ . There are 5 figures and 6 tables. ✓

Card 2/2

S/780/62/000/005/002/002  
I060/I242

AUTHORS: Bendel', L.S., Braunshtoyu, B.I., Ipat'yev, V.V. (Deceased), and Teodorovich, V.P.

TITLE: Purification of liquid propane-propylene fraction (PPF) from hydrogen sulfide by phosphate

SOURCE: Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh protsessov. Trudy. no.5. Leningrad, 1962. Protsessy i apparaty neftekhimicheskoy tekhnologii, 217-255

TEXT: The authors reject the nitric acid purification method and recommend the US phosphate method. Solutions of  $K_3PO_4$  of various concentrations were prepared by neutralization of  $H_3PO_4$  or of orthophosphoric acid by caustic potash. The physical-chemical properties such as specific weight, boiling point, viscosity, and specific heat of 1 M and 2 M solutions of  $K_3PO_4$  were studied at various degrees of saturation with  $H_2S$ . The authors determined the

Card 1/3



S/780/62/000/005/002/002  
1060/1242

## Purification of liquid...

equilibrium distribution of  $H_2S$  between the liquid PPF and the 2 M solution of  $K_3PO_4$  and between the PPF fraction and the 0.18 M solution of  $NaPO_3$  at  $20^\circ C$ . The vapor pressures of  $H_2S$  and water over a 2 M solution of  $K_3PO_4$  at 100, 120, and  $140^\circ C$  and of  $H_2S$  and water over a solution of  $K_3PO_4 + K_2HPO_4$  at 120 and  $140^\circ C$  were determined. The rate of absorption of  $H_2S$  from liquid PPF fraction by a 2 M solution of  $K_3PO_4$  was measured. The driving force was determined by the difference between the concentration of  $K_3PO_4$  in solution not combined with  $H_2S$  and its equilibrium concentration in relation to PPF. The formula for calculation of the rate of mass transfer was empirically confirmed by a series of experiments where the degree of saturation of the  $K_3PO_4$  solution varied between 0.38 and 0.95, the concentration of  $H_2S$  in PPF from 0.6 to 6.3 mole %, and the height of the column between 0.32 and 1.30 m. The contact surface between phases in a spray column was determined and the value of the extraction coefficient was reduced to a unit of contact area

Card 2/3

S/780/62/000/005/002/002  
1060/1242

Purification of liquid...

between the calculated phases. The number of theoretical plates required in the regeneration column for the solutions of  $K_2PO_4$  saturated with  $H_2S$  and the minimum steam expenditure were calculated. There are 19 figures and 17 tables.

Card 3/3

BROUNSHTEYN, B.I.; ZHARKOVA, V.R.

Absolute viscosimeter for measuring viscosity under pressure.  
Trudy VNIineftekhim no.5:20-39 '62. (MIRA 15:7)  
(Viscosimeter)

BROUNSHTEYN, B.I.; ZHARKOVA, V.R.

Comparative evaluation of the bicalorimeter and plate methods  
for measuring the heat conduction of liquids. Trudy VNI-  
neftekhim no.5:39-52 '62. (MIRA 15:7)

(Calorimetry)

(Liquids—Thermal properties)

BROUNSHTEYN, B.I.; BEZDEL', L.S.; GORENBURG, V.P.; SOKOLOVA, Ye.A.

Modeling of liquid-liquid extraction processes in pulse columns.  
Trudy VNIineftekhim no.5:148-195 '62. (MIRA 15:7)  
(Extraction (Chemistry))

1576

ACCESSION NR: AR4025721

8/0081/64/000/002/B074/B074

SOURCE: RZh. Khimiya, Abs. 2B496

AUTHOR: Razumov, G. A.; A. A. Kane, B. I. Brounshteyn

TITLE: The kinetics of the thermal decomposition of solids

CITED SOURCE: Sb. tr. Gos. in-ta prikl. khimii, vy\*p. 49, 1962, 170-182

TOPIC TAGS: kinetics, thermal decomposition, solid state decomposition, activation energy, inorganic crystal

TRANSLATION: It has been shown that the Yerofeyev equation which is used in practice does not correctly describe the process of thermal degradation of inorganic crystals since it holds only for a reaction in a continuous medium with formation of a nucleus in the volume. During the thermal decomposition of crystals, nuclei are formed only on the surface. A solution was obtained to the problem of calculating the probability of a reaction at a given point in the body for the general case with a body of any shape and an arbitrary law for the formation of nuclei not only on the surface, but also throughout the volume of the body. The exact solution obtained is analyzed for two limiting cases. It is shown that the

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ACCESSION NR: AR4025721

total energy of activation depends not only on the nature of the compound but also on the dimensions and shape of the particles. By means of the similitude theory, two dimensionless variables are found which define the process of thermal decomposition Authors' summary.

DATE ACQ: 03Mar64

SUB CODE: TD, IC

ENCL: 00

Card 2/2

BROUNSHTEYN, B. ; YURKOV, G.M.

Approximate method for the calculation of the thermodynamic functions of diatomic ideal gases at high temperatures taking the higher anharmonicity constants into account. Zhur. fiz. khim. 36 no.6:1191-1197 Je'62 (MIRA 1727)

1. Leningradskiy institut prikladnoy khimii.



BROUNSHTEYN, B.I.; MAKAROV, V.V.

Conditions of cavitation in pulse columns. Trudy VNIIneftekhim  
no.5:195-205 '62. (MIRA 15:7)

(Extraction (Chemistry))  
(Cavitation)

USTRAYKH, M.A.; BROUNSHTEYN, B.I.; POKORSKIY, V.N.

Selective solution by diethylene glycol of toluene-n.heptane in  
countercurrent packed columns. Zhur.prikl.khim. 35 no.11:2454-2460  
N '62. (MIRA 15:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh  
protsessov.

(Toulene)

(Heptane)

(Extraction (Chemistry))

ZHELE ZNYAK, A.S.; BROUNSHTEYN, B.I.

Determination of partial mass transfer coefficients during  
extraction in the system n-heptane - toluene - diethylene glycol  
in a propeller stirrer. Zhur.prikl.khim. 35 no.12:2706-2714  
D '62. (MIRA 16:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh  
protseessov.  
(Systems (Chemistry)) (Mass transfer) (Extraction (Chemistry))

BROUNSHTEYN, B.I.; YURKOV, G.N.

Critical remarks concerning P.I.Artyom's article "Calculation of  
thermodynamic functions of ideal gases from spectroscopic data."  
Zhur.fiz.khim. 36 no.5:1110-1112 My '62. (MIRA 15:8)

1. Gosudarstvennyy institut prikladnoy khimii.  
(Gas dynamics) (Artyom, P.I.)

BROUNSHTEYN, B.I.; YURKOV, G.N.

Statistical methods of calculating the thermodynamic functions of ideal gases. Part 5: Approximate methods of calculating the thermodynamic functions of diatomic gases. Trudy GIFKH ~~4~~.49: 5-19 '62. (MIRA 17:11)



RAZUMOV, G.A.; BROUNSHTEYN, D.I.; KANE, A.A.

Kinetics of the thermal decomposition of solids. Trudy GIPKH  
no.49:170-182 '62. (MIRA 17:11)

BROUNSHTEYN, B.I.; GITMAN, I.R.

Some models of the mechanism of mass transfer to moving drops.  
Trudy GIPKH no.49:289-315 '62.

(MIRA 17:11)



L 15741-63

EPF(c)/EPF(n)-2/ENT(1)/BDS AFFTC/ASD/IJP(C)/SSD

Pr-4/Pu-4 RM

ACCESSION NR: AR3002681

S/0124/63/000/005/B125/B125

SOURCE: Rzh. Mekhanika, Abs. 5B763

68

AUTHOR: Brounshteyn, B.I.; Todes, O. M.

TITLE: Calculation of the velocity pulsation and the coefficients of heat and mass transport for solid particles immersed in a turbulent current

CITED SOURCE: Tr. Odessk. un-ta. Ser. fiz. n., v. 152, no. 8, 1962, 85-90

TOPIC TAGS: motion equation, heat transfer, mass transport, turbulent current, particle, Reynolds number, turbulence, harmonic, Nusselt number, average

TRANSLATION: As a result of the approximate integration of the simplified equation of motion of solid particles in a current, the speed of which is varied according to a harmonic law, formulas for the calculation of the velocity pulsation of the particles for any Reynolds number are obtained. In calculating the averaged-over-a-period value of the Nusselt number, it is proposed to use the known dependence, under the assumption that the processes of thermal and mass transfer are quasi-stationary. Bibl. 9 names Yu. P. Gupalo

DATE ACQ: 14Jun63  
Card 1/1

SUB CODE: PH

ENCL: 00

ZHELEZNYAK, A.S.; BROUNSHTEYN, B.I.

Mass transfer during the extraction with single drops.

Zhur. prikl. khim. 36 no.11:2437-2445 N '63.

(MIRA 17:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh protsessov.

BROUNSHTEYN, B.I.; ZHELEZNYAK, A.S.

Determination of partial mass transfer coefficients in systems with a variable distribution coefficient. Dokl. AN SSSR 153 no.4:889-891 D '63. (MIRA 17:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut nefte-khimicheskikh protsessov. Predstavleno akademikom S.I. Vol'fkovichem.

BROU SITEYN, B.I.; YURKOV, G.N.

Certain evaluations of errors in calculating thermodynamic  
functions by approximate methods. Zhur.fiz.khim. 36 no.10:  
2303-2304 0 '62. (MIRA 17:4)